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HEARTBLOCK

With Complete A-V Dissociation

D. L. Baker, D.V.M.

VETERINARY MEDICAL literature in comparison to human medical literature contains but very few reports concerning cardiac arrhythmias. The purpose of this article is to present the salient features of one type of cardiac arrhythmia along with the findings in a typical case presented recently to Stange Memorial Clinic, Iowa State College.

Auriculoventricular block is the condition resulting from defective conduction of the impulse from the atrium to the ventricle. There may be a delay in the transmission of the impulse through the A-V node and bundle, or there may be a complete interruption of occasional or all impulses. Accordingly, three types of heart block are clinically recognized.

1. Incomplete A-V block (first degree block) in which there is delayed A-V conduction.

2. Partial A-V block (second degree block) in which some of the impulses from the auricles are blocked at the A-V

node. For example, if one auricular impulse is conducted to the ventricles thereby initiating a ventricular contraction but the alternating auricular impulse is not conducted, there are two auricular contractions to each ventricular contraction and hence the term, 2:1 block.

3. Complete heart (A-V) block (third degree block) in which case all auricular impulses are blocked at the A-V node. The ventricles, however, continue to contract at a decreased rate and independent of the atria (A-V dissociation) in response to a pacemaker in the A-V bundle below the site of the block or occasionally in response to a pacemaker in the ventricular musculature.

The clinical case discussed herein is of the third mentioned type. It is the least frequently occurring type of heart block.

While on a weekend fishing trip the owner of a 6-year-old female (spayed) Boxer noted acute illness of the dog. Unusually intense anxiety, weakness and pallor with cyanosis developed in rapid succession. Syncope due to cerebral an-

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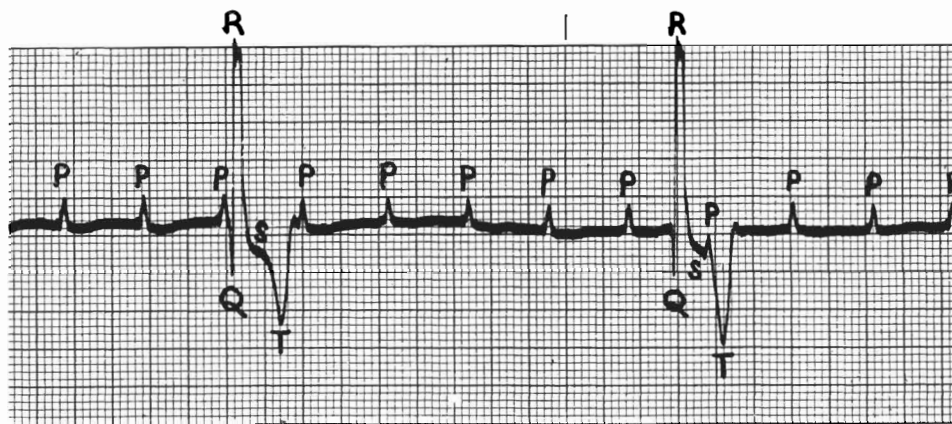


Figure 1.

oxia occurred almost immediately. A mild convulsion occurred during syncope. The animal regained consciousness within a very short time but remained extremely weak. She was carried to the owner's car and driven to the local practitioner's office. The dog suffered three mild epileptiform attacks while enroute to the veterinarian's office. Four hundred mg. Equanil® (Wyeth Laboratories) was administered and the owner was advised to return the dog in 48 hours. The therapy was continued the following day. Forty-eight hours after the initial exam, the dog was returned to the local veterinarian for examination. Several attacks of 15 to 20 seconds duration occurred while she was being examined. In each instance she "threw her head back," respirations increased and the animal fell on her side. Within seconds she was able to "regain her feet." One cc. of Sparine® (Wyeth Laboratories) was administered at this visit.

On the third day, after onset of the symptoms, she was presented to this clinic. In addition to the aforementioned history it was learned that the patient had an attack of nephritis about 6 weeks previously. Examination revealed moderate pallor of the mucous membranes and a peripheral pulse rate of 26 per minute. It was difficult to effectively auscultate the heart because of the barrel-shaped chest and the animal's obesity. Only the usual sounds associated with ventricular contraction were audible. Intermittently the amplitude was increased; the rate was, of course, decreased. An electrocardiogram, lead 2 of which is shown (Fig. 1), was made. All other findings were essentially normal except for a moderate leucocytosis (17,400 W.B.C.) with a 1:1 stab-segment ratio.

Even though the history and symptoms, especially the auscultatory findings, were suggestive of a heart block, a final diagnosis was reserved until the electrocardiogram was available. At that time a diagnosis of heart block with complete atrioventricular dissociation was rendered.

The heart block in itself was believed to be responsible for the symptoms and

inasmuch as symptoms of nephritis were not apparent, therapy was aimed solely at relief of the cardiac condition. Epinephrine 1:100 given hypodermically, Paredrine® (Smith, Kline, and French Laboratories) or ephedrine orally and Isuprel® (Winthrop Laboratories) sublingually have been recommended. Digitalis would appear to be contraindicated because of its vagal stimulating effect and its tendency to impair A-V conduction by its direct action on the A-V node and bundle of His. Paredrine®, 20 mg. t.i.d., was prescribed, an unfavorable prognosis was rendered and the animal was discharged to the owner with instructions to keep the dog as quiet as possible.

The electrocardiogram (Fig. 1) was of definite value in making a diagnosis of this case. In complete A-V block there is a complete dissociation of the auricles and ventricles, of the P (auricular) and Q-R-S (ventricular) waves. The former occurred at regular intervals, at a rate of 138 per minute, the latter occurring independently and regularly at a rate of 26 per minute. The P waves occurred in varying relations to the Q-R-S waves. In some instances P waves were superimposed on Q-R-S complexes and T waves.

SUMMARY

1. The history, symptoms, diagnostic features, prognosis and therapy recommended in a case of heart block with complete A-V dissociation in a dog are reported.
2. The value of the electrocardiogram in this case is discussed briefly.

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